WESTERN NATIONAL INSURANCE
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Spray Booth Construction Basics

Loss Control Bulletin

Spray finishing using flammable liquids is found in a wide range of workplaces. Spray operations cause the flammable liquids to atomize under pressure, which makes them more easily ignitable. Maintaining control of these hazards will help to protect employees and reduce property damage if there is a fire or explosion. This document outlines the basic requirements of a National Fire Protection Agency (NFPA) approved spray booth.

Construction and Design

- Walls, doors, and ceilings that intersect or enclose a spray area shall be constructed of noncombustible or limited combustible materials and assemblies. They should be securely and rigidly mounted or fastened.
- The interior surfaces of spray booths should be smooth and continuous without edges and otherwise designed to prevent pocketing of residues and facilitate cleaning and washing without injury.
- Air intake filters that are part of a wall or ceiling assembly should be listed Class 1 or Class 2 in accordance with ANSI/UL 900.
- Aluminum should not be used for structural support members or the walls or ceiling of a spray booth. Aluminum should also not be used for ventilation ductwork associated with the spray booth.
- If walls or ceiling assemblies are constructed of sheet metal, single skin assemblies shall be no thinner than 1.2 mm, and each sheet of double skin assemblies shall be no thinner than 0.9 mm.
- Spray booths should be separated from surrounding areas of the building by construction assemblies that have a fire resistance rating of one hour.
- Enclosed spray booths should be provided with means of egress that meet the requirements of NFPA 101, Life Safety Code.
- Spray booths should be separated from other operations by a minimum distance of three feet or by a partition, wall, or floor/ceiling assembly having a minimum fire resistance rating of one hour.
- Spray booths should be installed so that all parts of the spray booth are readily accessible for cleaning.

Fire Suppression

The spray booth, exhaust ductwork, and the area behind the filters must be protected with an approved automatic fire protection system. The extinguishing system can be water, foam, gaseous agent, or dry chemical, but they must meet all NFPA requirements. The system must activate a local alarm, shut down all spray operations, and stop any conveyors going into the spray booth. There should be no overspray on any of the sprinkler heads. They should all be covered with a thin paper or cellophane bag that has a thickness of .003 inches. All extinguishing systems need to be inspected and maintained by a qualified contractor.

Ventilation

Spray booths should have mechanical ventilation capable of confining and removing vapors and mists to a safe location, as well as confining and controlling flammable residues and dusts. Exhaust fans should be nonferrous, and the motors should be explosion proof. The ventilation system and the spray gun should be interlocked so the spray operations cannot operate unless the ventilation is turned on and functioning. Filters should be replaced based on the manufacturer's recommendations.

Electrical

All electrical fixtures, switches, and junction boxes inside of the booth must be UL-listed explosion proof and meet NFPA standards. There should never be any additional electrical devices inside of the booth such as fans, heaters, radios, portable lighting, electric cords, equipment, etc.

Resources

- NFPA 33 – Spray Application using Flammable Materials